

1 Docket No. FOM-119.01

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3 VERY HIGH REPETITION RATE POWER SUPPLY SYSTEM AND METHOD

4

5 ABSTRACT OF THE DISCLOSURE

6 A system and method for a power supply system that charges a
7 capacitor, wherein the capacitor charge drives a pulse discharge
8 driven system. The power supply system utilizes a main power
9 supply and a resonant inductor and capacitor configuration to
10 charge the capacitor to a specified, large percentage of a
11 driving voltage that is required by the pulse system. A control
12 module monitors the capacitor charge and disconnects the main
13 power supply when the capacitor charge is within the specified
14 percentage. The main power supply disconnect causes the inductor
15 to discharge and similarly charge the capacitor in a more
16 controlled manner. Once the control module measures the
17 capacitor voltage at the full driving voltage, the control module
18 commands a switch to separate the inductor from the capacitor.
19 The control module similarly activates a small high voltage power
20 supply that monitors the capacitor and replenishes any natural
21 capacitor discharge that may occur in the time between the full
22 capacitor charge and the capacitor discharge by the pulse
23 discharge driven system. Once the pulse discharge driven system
24 discharges the capacitor, the control module returns the power

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1 supply system to its initial state, wherein the main power supply
2 and residual energy in the capacitor cooperate to efficiently
3 charge the inductor and capacitor. The charging cycle continues
4 repeatedly as a function of the pulse discharge driven system
5 requirements.

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